



European Transport Safety Council



# Interactive modular warning sign of pedestrian crossing



VILNIUS GEDIMINAS  
TECHNICAL UNIVERSITY

**Presented by**

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# Introduction

- Number of people killed (per million population) in road accidents in Lithuania (2015) – 82 (EU average – 51.5)
- Number of road accidents in Lithuania (2015) - 3161
- Number of road accidents related to pedestrian injuries in Lithuania (2015) – 955 (30.21%)

# Main safety issues

The main reasons of traffic accident at pedestrian crossings:

- Bad visibility of crosswalks during the hours of darkness and bad weather conditions.
- Lack of drivers' attention while driving.







# The concept

- Drivers should be informed about pedestrians near the crosswalk.
- Attention of the drivers can be increased by seeing a warning light near pedestrian crossing.
- A change of visual information will impel drivers to reduce driving speed.

# Optional ideas

## **First idea:**

- Solar powered direct illumination with motion sensor.

## **Rejected because:**

- High energy consumption
- high price of the project
- Low efficiency in bad weather conditions

## **Cost of the project:**

- >4500 Eur + installation cost

# Optional ideas

## **Second idea:**

- Glowing zebra crossing – crosswalk painted with photoluminescent material.

## **Rejected because:**

- High price of material
- High glowing only for 15 minutes
- Need an additional lighting for charging at each 30 minutes

## **Cost of the project:**

- >2500 Eur + additional lighting + installation cost

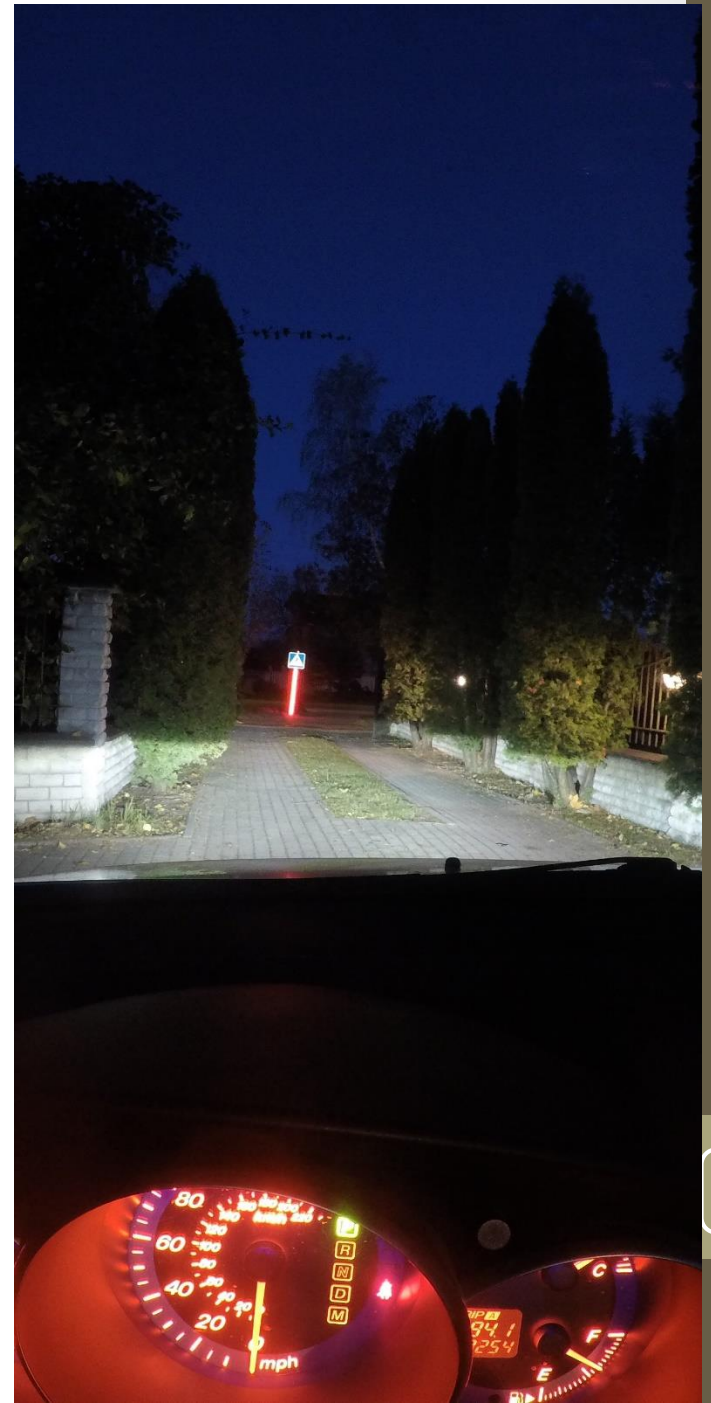


# Final idea

Modify existing crosswalk sign by installing interactive sign modules.

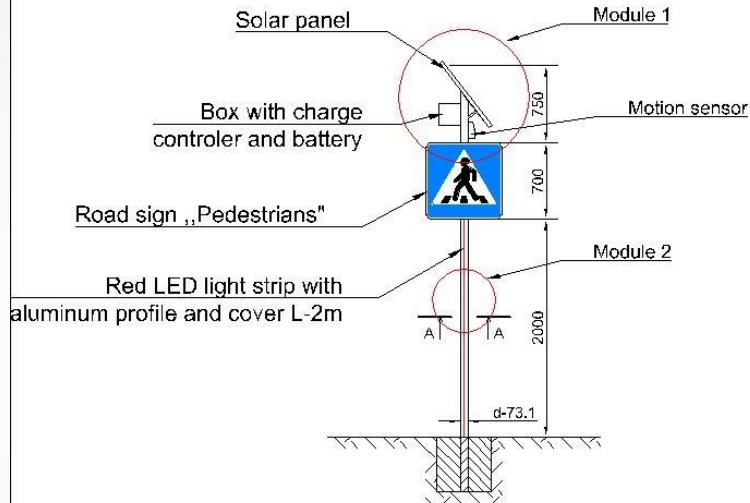
Interactive sign modules :

- Module 1– solar panel, converter, battery, motion sensor, WiFi module.
- Module 2 – LED light strip with profile and cover.

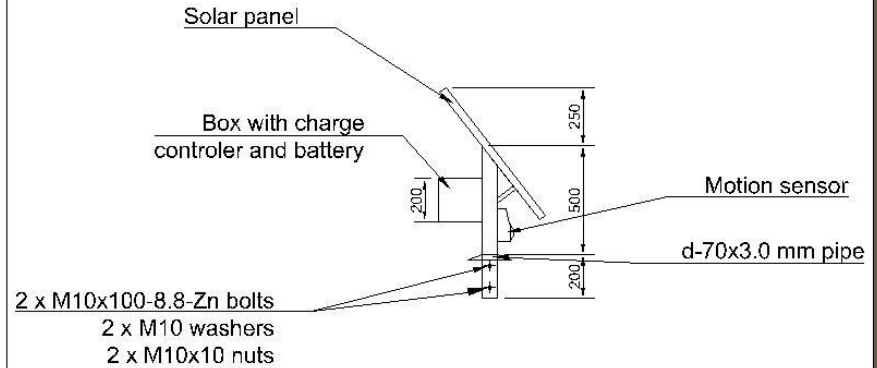


# Interactive sign scheme

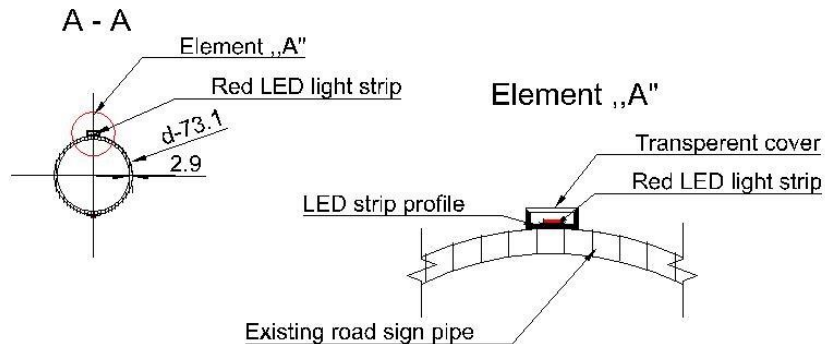
Front view of interactive road sign



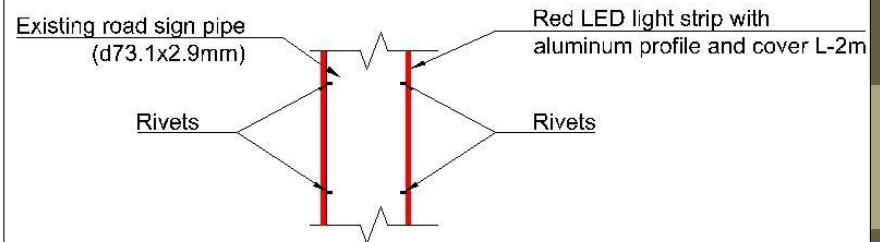
Module 1



Sections

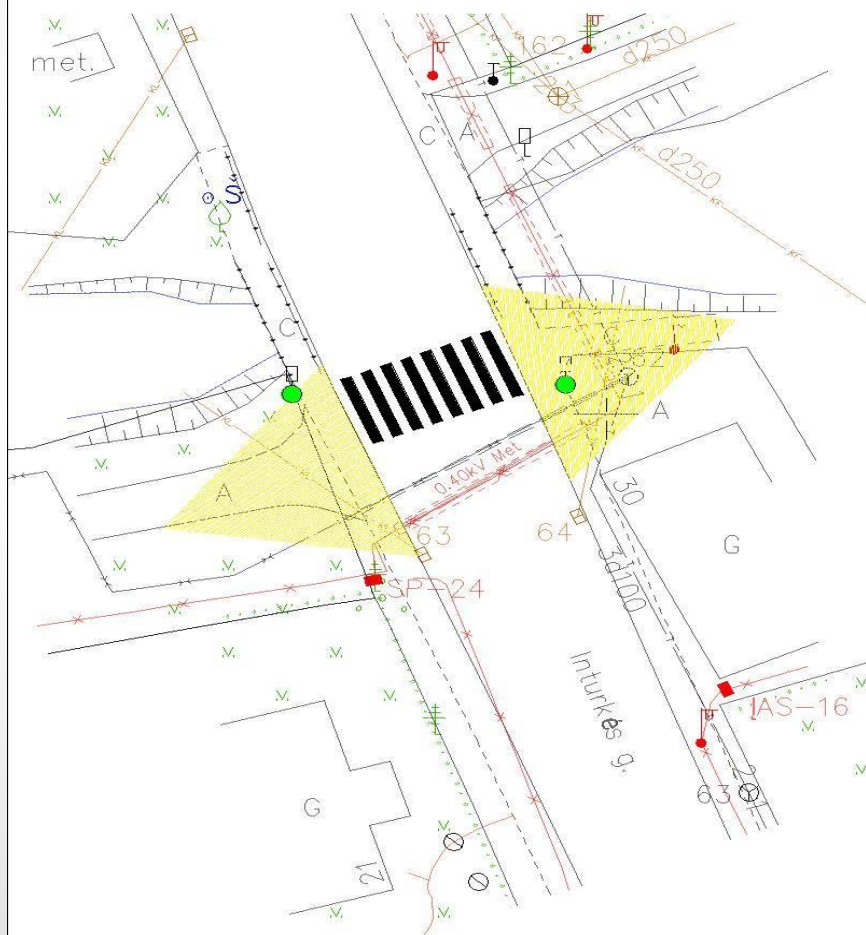


Module 2 (section)

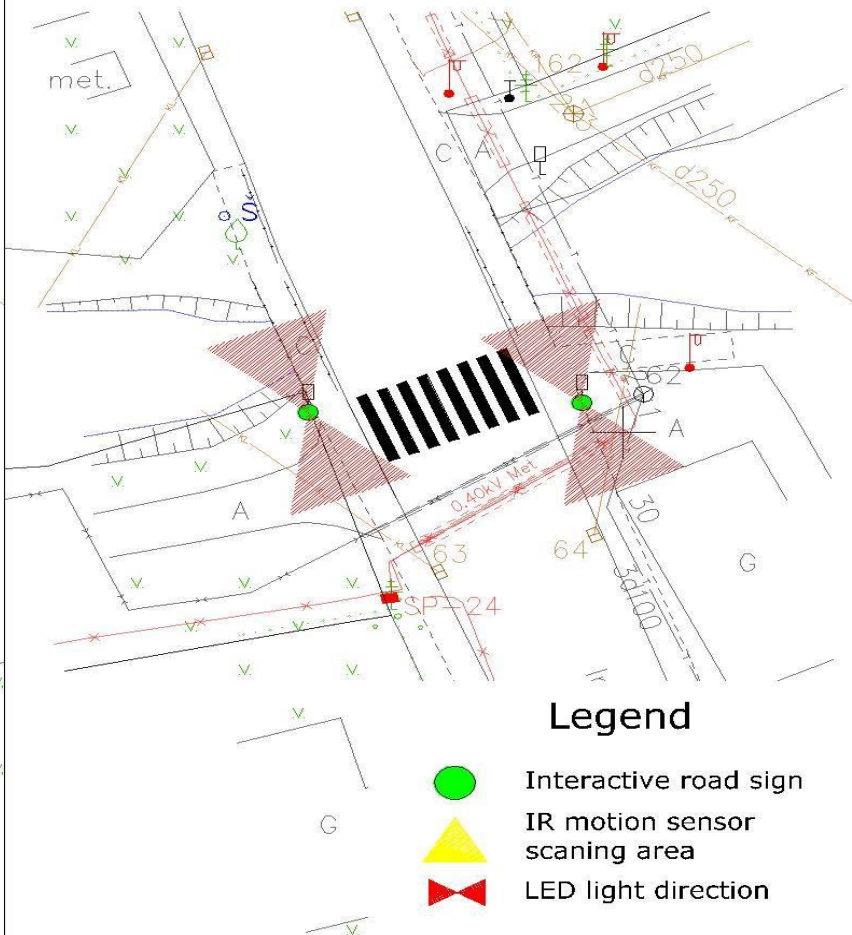


# How it works




## Motion sensor working zone scheme



## LED light direction scheme

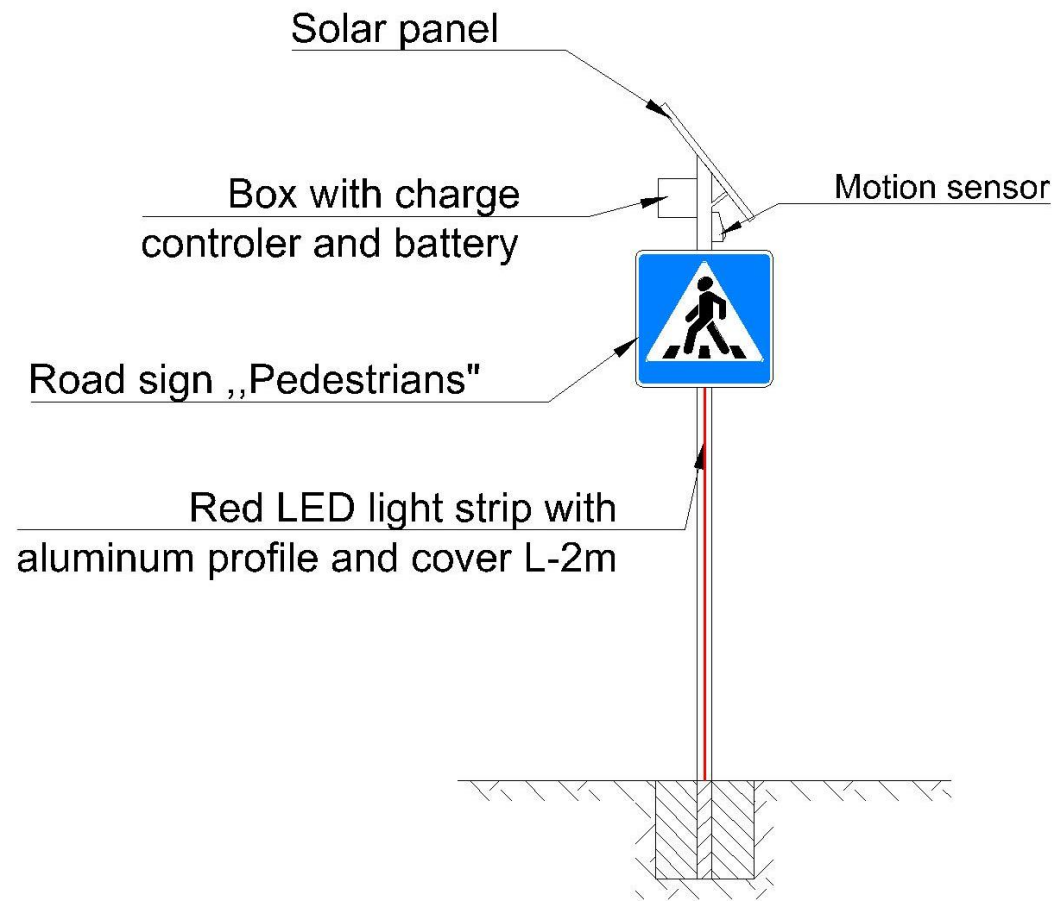


### Legend

-  Interactive road sign
-  IR motion sensor scanning area
-  LED light direction

# Global solution

- Simple installation
- Good price
- Fully autonomic
- Eco friendly
- Simple and cheap maintenance



# Location

- Molétai city, Inturkès street (road Nr. 172)
- Recently installed crosswalk with very high possibility of road accident.
- Was identified as the most dangerous pedestrian crossing in the city by local authorities and people.
- Main crosswalk between the bus station, living area, schools and city park.
- Crosswalk belongs to the main walking path of the city.





# Partnership



- ETSC and YEARS project lecturers.
- VGTU lecturers.
- Lithuanian Road Administration under the Ministry of Transport and Communications.
- The Municipality of Molėtai city.
- Utena Regional Road Service.
- Company of Road Design „Inžinerinis projektavimas“
- Road Building and Maintenance Company „Bebrusai“



**LIETUVOS AUTOMOBILIŲ  
KELIŲ DIREKCIJA**



**VĮ UTENOS  
REGIONO KELIAI**



# Strategy and calendar

- ✓ Discussion with local people about the most dangerous pedestrian crossings in Molétai. September 2016
- ✓ Collecting data. September 2016
- ✓ Discussion with local authorities about road safety problems in Molétai city. September 2016
- ✓ Designing an interactive modular warning sign of pedestrian crossing, making a cost analysis. September 2016
- ✓ Presentation of the idea to the city authorities and road safety commission – asking for support. October 2016
- ✓ Talking with road design and road maintenance companies – asking for support. October 2016
- ✓ Talking with regional road service. October 2016
  - Implementing our idea. – March/April 2017
  - Informing the media and people. – April/May 2017
  - Evaluation of the results and writing a report. – May/June 2017
  - Presentation of the results for the local authorities. – June/July 2017
  - Sending the result to the council. – July/August 2017



# Evaluation of the results

- Survey for pedestrians and drivers.
- Analysis of the results and discussion with the city municipality and road safety commission about development of this idea in other locations.

# Difficulties

- Both signs do not start working at the same time (wireless connection).
- Acts of vandalism.



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